Issue 59
December 2024

Utah Valley Amateur Radio Club

The UVARC Shack

A focus on antennas

Noji Ratzlaff KNØJI built a simple 2-meter dipole antenna, attached coax to it on a foam board, and holds them up during Day 1 of his three-day antenna class at Sage and Plow in American Fork. He hosted this mini-series in hopes of inspiring others to join him in helping an ever-increasing population of new amateurs come up to speed on antenna knowledge. You can download the class PPT here and see the YouTube videos here, thanks to Trevor Holyoak AG7GX.

In this issue of the *UVARC Shack*

Club meetings feature the Buddi-Pole DXpedition and our annual DIY Night.

My Shack spotlights KB7M. *Amateurs in Action* in Samoa via Antarctica. *Brass Tacks* on Microphones.

Dear Annette on how closely to your radio to mount your power supply and how to get coax around a corner. *Hot Tips* on an external speaker, DIY for a multi-cable enclosure. *The Amateur in You* on ham radio realities and desense.

Please send your ideas, stories, questions, gripes, and photos to ***uvarcshack@gmail.com***

Inside this issue

Other points of interest

Club meetings

Recap

October 2024 club meeting – Buddipole DXpedition

The owner of Buddipole, Inc., Chris Drummond W6HFP, presented a delightful montage of a number of DXpeditions he and his friends have ventured on. A "DXpedition" is a journey to a distant land, often a remote island, where a group of hams set up one or more stations and contact people all over the globe. The photos and videos of Chris' presentation are taken of his travels primarily in the Caribbean, and were simply fun to see. He even brought and set up some of his own Buddipole equipment that he used during the trips.

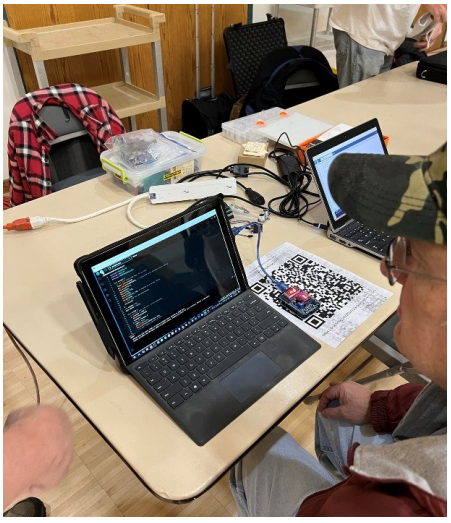
November 2023 club meeting – DIY Night

It was time once again for our annual DIY (do-it-yourself) Night, and once again it was a success, with 78 people present. Many folks showed up to either share or learn a skill, such as soldering, antenna analysis, how to use a meter, and antenna building. It was also a chance for people to come and get questions answered, get their radios programmed (thanks, Ralph K7RLN!) or meet others in the club. The only complaint we heard was that it didn't last long enough, so we'll have to work on that. More photos on page 3.

By the way, many of our past meetings are recorded and posted on the club YouTube channel.

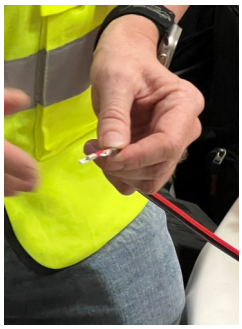
UVARC Annual DIY Night

In photos



UVARC Annual DIY Night

In photos



My Shack

Highlighting the shack (ham equipment and room) of a member, to give others an idea of the possibilities that might work for them

Keith McQueen, KB7M

When I was a teenager, growing up in the Denver, Colorado area, I bought an old tube-type shortwave receiver and strung up a wire antenna under the eaves of the house. I spent many hours listening to hams and shortwave broadcast stations. Later, when I returned from working as a missionary for the Church of Jesus Christ of Latter-day Saints, I got interested in CB radio and was fascinated by the emergency communications capabilities.

While moving to Utah, the engine of my ancient Ford pickup truck blew up and stranded us in the middle of Wyoming. Luckily I had a CB radio in the truck, and was able to flag a call for help. We were saved that day by a kind trucker monitoring channel 19.

After moving to Utah I got involved in the local REACT group. It was at this time that a friend introduced me to ham VHF radio and showed me his 2-meter handy-talkie (HT) and how it could talk long distances via a repeater.

One day, I noticed a posting on the company bulletin board for a free class to obtain an Amateur Radio "Ham" license. I had always wanted to do this since I was a child. Dad had taken me with him to visit a ward member who was a Ham. I signed up for and attended the class, learned Morse code and passed my Novice and Technician license tests in the summer of 1985, later upgrading to an Extra class license.

My first ham radio was a Kenwood TR-2500 HT that I bought used from a local ham. This radio covered the 2-meter band only with no extended receive and had 10 memories for storing frequencies. The offset had to be manually set via a small switch on the back of the unit. It could encode a single tone that had to be manually tuned via a trim-pot on the unit. At least I didn't have to buy crystals for each channel like many hams at the time did.

I later purchased a Yaesu FT-470 handheld that covered 2 meters and 70 cm. That radio cost me $470 on sale. I still have it and it still works just fine, although the NiCd battery has long since died. My first mobile radio was an Icom IC-28H 2-meter mobile.

I currently own countless mobile and handheld radios. (How does the saying go? Whoever dies with the most radios wins? I may not be winning, but I'm definitely in the running.)

At any rate, I've tackled the hobby with enthusiasm and soon became involved with the Utah County Amateur Radio Emergency Service (UCARES) group, whose mission is to provide emergency communications to the community. Later, this progressed to the next level and I was invited to join the Sheriff's Communications Auxiliary Team (SCATeam). The SCATeam has since been renamed to the Emergency Communications and

My Shack
continued

Support Team (ECSTeam). This group of individuals works specifically with the Sheriff's Office emergency management bureau. Through this involvement, I have had experiences such as helping with forest fires, escaped convicts, surveillance, downed aircraft, and many other emergency and public safety situations. ARES and ECSTeam use public service events such as marathons, parades, bicycle races, etc., as training events.

While serving on the ECSTeam, I've become involved with the group that builds and maintains mountain top repeater equipment for the team. One of the team's founding members, David Martin WA7FFM, the team's repeater guru, took me under his wing and taught me how to configure and tune up repeaters. I truly enjoy this work and enjoy spending time 4-wheeling to the various mountaintop sites and working on the equipment there. Initially, we only had one 2-meter repeater at one site. This has grown to over seven sites and upwards of ten repeaters. In recent years we have been able to link all of these sites and repeaters with a digital microwave backbone allowing us to link combinations of repeaters at will to create custom repeater system coverage areas in county as needed for whatever event may be occurring at the time.

When UVARC was created I was asked to be involved with the configuring, installing and maintenance of the UVARC repeaters. This has added another enjoyable aspect to my repeater building career. I find that there is great synergy between the UCARES and UVARC groups and I support both in any way I can.

— 73, Keith

Keith currently serves as a resident expert on the club's repeater committee, as well as the same with the UCARES folks.

Amateurs in Action

Recounts of ham radio operators who have used their effort and skills to help others in a time of need

Antarctica relay

Vaughn Hawkes WA7GFU and wife Arlene

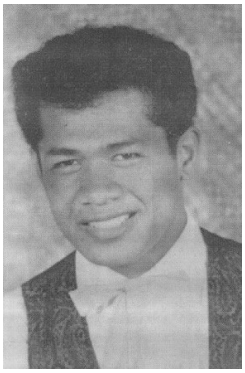
It was January 1970 on the islands of American Samoa. Arlene Hawkes was at home when a neighbor informed her that a friend living nearby was very ill. Arlene went to visit the friend, but later that day, the friend passed away. In Samoa the local tradition is that the dead must be buried within 24 hours, but in this case there was one catch: the 35-year-old son of the deceased woman had to be notified immediately, so that he could attend his mother's funeral.

It turns out that the son was in California, and although Arlene and some of the locals had his phone number, very few people had telephones. In fact, it was going to take a couple of days to reach the telephone on an adjacent island, and they couldn't afford the time. So, Arlene encouraged her husband, Vaughn Hawkes KS6BX (today WA7GFU), to use his Heathkit SB-100 to somehow reach and inform the son.

Vaughn agreed, and called out on 20 meters, asking to make a California contact. After calling for a few minutes, a guy from Alabama answered and tried to help him. But the signal was very weak and the copy was so rough, that even repeated shouting of the young man's name and number just couldn't get through.

Out of nowhere, a loud voice boomed through the speaker, another guy who said he'd been listening to the exchange, said that not only could he hear Vaughn quite clearly, but that he had a telephone nearby. Vaughan announced the young man's number, the call was made, the young man was contacted, and he said he'll be on the next available flight out to American Samoa. The loud, booming voice? We don't have his call sign, but he was a ham who was stationed in Antarctica, and he could hear Vaughn much better than did the guy in Alabama.

On another occasion in 1965, on another American Samoan island, a young man named Surran Afualo emerged on a motorcycle from the jungle outgrowth onto the main road and ran right into the side of a bus. The impact pushed his thigh bones into his pelvis on both sides, and he was transported to the nearest hospital. Medical attention being as primitive as it was on the remote islands left Surran with little hope of ever walking again. When Arlene heard of the accident, she insisted that Vaughn do something, since she knew more advanced medical care was available in Hawaii 2500 miles to the north.



Surran Afualo

Vaughn got on his radio when he knew that a regular weekday net was taking place, and broke in with priority traffic. He said there was no telephone where he was, but needed to get hold of a doctor at Tripler Army Hospital, north of Honolulu. Don Kellis K6AWH in California took the call and relayed to Will Arscott KH6QB in Honolulu, who got hold of a doctor at Tripler. Eventually, the boy was flown to Honolulu, and several surgeries later, Surran began to heal. He grew up, married, raised a family, and lived a normal life.

New Hams and Upgrades

New hams

KK7VPN = Kevin Dent
KK7VPS = Von Santiago
KK7VQB = Stephen Humphrey
KK7VQL = Alberto Solorzano
KK7VQY = Carter Olson
KK7VRC = Stephanie English
KK7VSV = Kenneth Lewis
KK7VTA = Justin Dean
KK7VWO = Brandon Hiatt
KK7VYX = Andrew Edson
KK7VYY = Brian Smith
KK7VZD = Jared Hess
KK7WBD = Richard Harris
KK7WCJ = Paul Whiting
KK7WCN = Jeff Plank
KK7WCV = Winston Lee
KK7WCY = Harley McDaniel
KK7WCZ = Scott Pugmire
KK7WDA = Lincoln Swan
KK7WDB = Niki Thornock
KK7WDC = Dan Wood
KK7WDF = Evan Cook
KK7WFA = Cade Bunker
KK7WIX = Garrett Haueter
KK7WOR = Christian Austin
KK7WVW = William Bowman

Upgraded hams

KK7NNN = Ren D'Angelo (General)
KK7RPH = Steven English (General)
KK7UBM = Matthew Holt (General)
KK7RIK = Daryl Yardley (General)
KK7SGK = Ronald Spencer (General)
KK7SFN = Larry Reynolds (General)
KI8CSM = Christopher McClain (General)
KV1RTL = Joseph Devereaux (Extra)
KK7WTZ = AnnElyse Tews (General)

Congratulations to all these diligent folks! We look forward to hearing you on the radio soon.

Events

Upcoming happenings

2024 Annual Christmas Potluck

Set aside the night of Thursday December 5th starting 6:00 pm, for the biggest potluck of the year, at the Orem Senior Friendship Center, 93 N 400 E. We've posted a sign-up sheet. The club will only supply the paper products, so we're looking for main courses, side dishes, desserts, drinks, and anything else you'd like to share with a dozen others.

Santa said he's also planning to be there to sample our goodies, so bring your little ones, to get photographed with Jolly ol' St. Nick himself. Seconds for those who get their photo taken on his lap.

We'll also have tables set up for you to show off your latest projects or newest purchases.

76ers Santa Net

The 76ers Santa Net tradition continues! The revered and long-anticipated net will take place on Monday December 23 and Tuesday December 24, at 6:00 pm on the 146.760 MHz repeater. Open to anybody, young or small, who wants to talk with Santa, but there must be at least one person at your station who is licensed.

To participate, simply bring your little ones to the radio, have them announce your call sign into the microphone when Santa asks for them, and when Santa calls for them, they can talk away at will. When they're done, they can say Thanks, give your call sign, and turn it back to Santa. No need for you to say anything, or intervene in any way, unless they're too young to do or say some of that.

Winter Field Day 2025

The Utah Valley Amateur Radio Club is planning to participate in Winter Field Day 2025 at the Lindon Marina, and all are invited. We plan to set up our stations as early as Friday January 24, but we'll actually be on the air, calling *CQ Field Day!* from noon Saturday January 25 through noon Sunday.

We'll need help setting up antennas, radios, and other parts of our three stations starting early Saturday morning. Afterwards, we'll need help taking it all down Sunday right at noon too. Please bring gloves. The club will provide dinner in the form of pizza and soft drinks between 5 pm and 6 pm Saturday January 25 inside or next to one of the RVs. All hams and their families are welcome to join the fun! This might be your opportunity to get on the air and make your first HF contact, even if you have no license. This is the link to the location. And this is the link to our Winter Field Day information page.

Antenna Class

There has been a recent upsurge in questions by those who have been looking for more in-depth and technical knowledge about antennas than what might have been presented in their ham radio exam courses. As an experiment to gauge interest, UVARC is holding a special Antenna Class, which might actually be taking place at the time of this publication, November 23 and 30, and December 7.

Brass Tacks

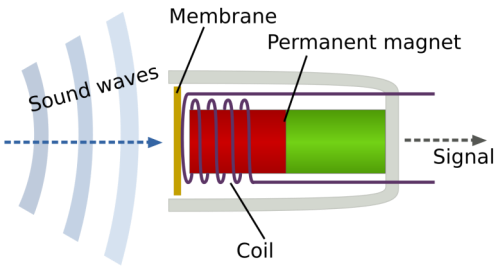
An in-depth look at a radio-related topic

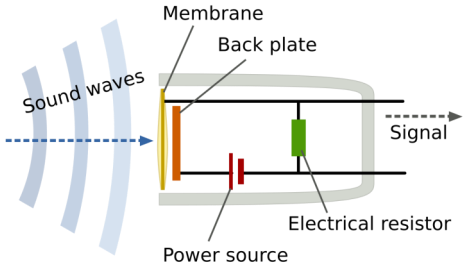
Microphones

After you got licensed, one of the first pieces of equipment you probably encountered was a transceiver, most likely a handheld. And if you're like most hams, you made your first transmission by voice into a ***microphone***, or "mic" (pronounced "mike") for short. Although they're indispensable to most amateur radio stations, we often take these components for granted, and simply expect them to work. Maybe it's time to take a few minutes and explore just how they work, the different kinds of microphones that are available, and maybe even a few of their usage concerns.

How a microphone works

A microphone is a typically active (requires electrical power to work) device that converts human-audible sound ("audio") into electrical signals, and is available in several different technologies. These include the dynamic microphone, the condenser microphone, and the piezoelectric microphone. A dynamic microphone uses a membrane connected to a small coil that vibrates around a permanent magnet. A condenser microphone uses a membrane, but as one of two capacitor plates that change the reactance of the circuit with the audio. A piezoelectric microphone also uses a diaphragm, but applies it against a crystal, which takes advantage of the piezoelectric effect.





The vast majority of today's device microphones (those contained in radios, smartphones, lavaliers, headsets, and other small devices) are condenser mics that are electret types. Just as a *magnet* is a material that contains a permanent magnetic field, an *electret* is a material that contains a permanent electric field. The high quality of transmitted sound, coupled with its low cost of manufacturing have resulted in the electret condenser microphone being found in nearly every device that needs a mic.

Previous to active microphones, several microphone-like devices that concentrated the human voice have been around for centuries. The megaphone, the dish reflector, the theater horn mask, and the tin can-and-string have amplified or carried voices long before electricity was

Brass Tacks

continued

used to perform the amplification. Then, in 1857, Antonio Meucci produced the first electric microphone, which he used to send audio via electrical signals to an electric speaker at the far end of a pair of wires, nearly twenty years before Alexander Graham Bell was credited with inventing the same communication device.

Microphone types

The three most common amateur radio microphone types are embedded microphones, hand microphones, and desk microphones. A few others, such as boom microphones and "in-line" or "earpiece" microphones, are also widely available, but our discussion will surround the three major types.

Embedded (built-in) microphone

In the HT (handheld transceiver) I referenced, you might not have noticed the presence of the *embedded* microphone (also called a *pinhole* mic) , because it was likely mounted inside the radio, accessible to your voice typically through a tiny opening in the body or face (circled in red to the right), often next to the speaker. When you press the PTT (push-to-talk) button on the side of the HT, we say that you're *keying up*, or attempting to transmit your voice.

These embedded microphones themselves work fairly well, but the small access hole and confined space of the plastic radio body can make the transmitted audio sound abnormally quiet, a little muffled, or even tinny, like the operator is speaking inside a soup can.

Hand microphone

A *hand* microphone is similar to the embedded microphone, but is a handheld device that's separated from the main transceiver body by an electrical cable, or *cord*. The PTT button is also typically located on the side of the hand microphone for convenience. Many of them present buttons for radio control, programming, and other functions, such as a keypad light, mute, or an audio filter.

When using a hand mic, it's best to prevent stretching the coiled cord too often, or it might not retain its shape. And if the cord is attached to the transceiver by an RJ-45 or RJ-11 plug (like the one shown on the right), then repeated stretching can loosen the cord sheath from the connector, exposing and potentially damaging the wires.

A hand microphone is typically accompanied by a mounting clip (also shown). Using one to hang your microphone not only keeps your shack neat, but can keep the PTT button clear of objects that can accidentally press on it and give you a "stuck mic", which can potentially time out the repeater if your transceiver is tuned to one.

Brass Tacks

continued

Desk microphone

A *desk* microphone (pictured at the top of this article) is a lot like a hand mic in its construction, but is also typically accompanied by a stand or a base that's heavy enough to keep the microphone in one location while you press its PTT and perform other manual tasks. Furthermore, many desk mics have a PTT lock button that will keep the PTT enabled until it's pressed a second time. Many modern desk mics have conveniently removable microphones that can be detached from the base and perform like a hand mic. A desk microphone can also be accompanied by a *foot switch*, a PTT that can be pressed by your foot.

Boom microphone

Another form of the desk mic is the *boom* microphone (pictured at the right), which is a desk mic that has been mounted on one or more poles ("booms") that suspend and stabilize the microphone above your working space, popular with broadcasters and avid amateur contesters.

Other microphone types

In your amateur radio journey, you might encounter other microphone types. If you're a member of ARES, for example, a *lapel mic* can be convenient when serving a callout or in a parade. A *shoulder mic* is similar to a lapel type, but attaches to a shoulder loop or chest strap. *Throat mics* are popular among the military and law enforcement as a hands-free device. The *ribbon microphone* was once the technology of choice for broadcasters, stage performers, and audiophiles for many years.

A *speaker-microphone* is a hand mic that contains a speaker, allowing you to both speak and hear the audio with a single hand device. A *headset microphone* is typically embedded in a set of headphones or ear buds. Some hand mics also contain multiple PTT buttons, which allow you to jump between frequencies and channels without the need to fumble with radio buttons.

By the way, a *guitar pickup* might be thought of as a type of microphone because it converts the audible vibrations from a plucked string into an electrical signal. But, it does so by a varying voltage induced through a magnetic field, and not by sound waves. So, a guitar pickup can work in a vacuum while a conventional microphone, which depends on air vibrations, cannot.

On the other hand, a *contact microphone* is designed to pick up sound from direct physical contact with objects such as glass, walls, water, and musical instruments. One such contact microphone is the ultrasound *transducer*, which is a device that uses the piezoelectric effect to both produce a high-frequency sound and pick up its echo reflecting off body organs or other things. The microphone in such a transducer is designed to detect the sound whose frequencies are outside the range of human hearing.

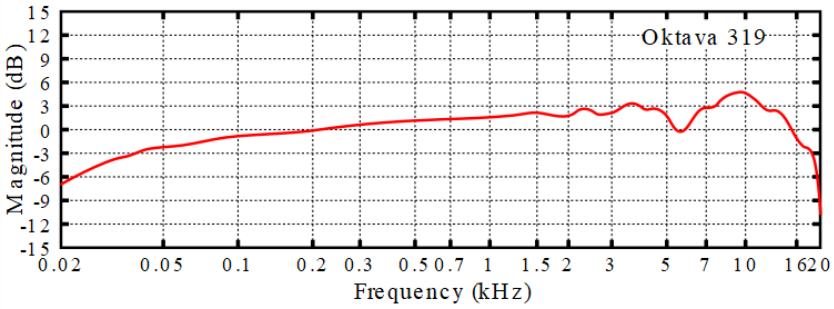
Microphone properties

Several common microphone properties gauge sound quality and audio characteristics. The microphone *frequency response* measures not only the audio frequency range (known as its *bandwidth*) it can convert to a signal, but its sensitivity throughout the range. Its *dynamic*

Brass Tacks

continued

range is the ratio between the loudest and quietest sounds of the response, often in decibels. The *self-noise* is the equivalent input noise level when the microphone is in the absence of all sound external to itself, and represents the lowest end of its dynamic range. The *clipping level* is the point at which the microphone's input is great enough that its generated signal begins to exceed the microphone voltage, resulting in a THD (total harmonic distortion) of 1%, which is considered the threshold of human ear perception and represents the higher end of its dynamic range.



Other microphone metrics include *sensitivity* (measure of how well the microphone converts acoustic pressure into voltage), *tonal quality* (measure of how well a microphone can produce a signal that represents and preserves the input sound quality in tone and timbre), *directionality* or *directivity* (directions relative to its axis in which a microphone exhibits greater sensitivity), and more.

One technical note that I hesitated to add, but decided would be appropriate for an article of this scope, is on *sound character*, the three-dimensional polar response of a microphone as a result of three microphone inputs. First input, the sound emanating from a piano, for example, doesn't simply come from the string, but also from the piano walls, cover, back, the piano hall walls, floor, ceiling, and more. They then arrive at the microphone at different times (phases), and changes to any of these will alter the sound picked up by the mic. Second input is within the microphone itself, as the sound strikes the microphone wall interior (front, sides, back of the mic), determined largely by the microphone enclosure geometry. Third input, the sound direction (where the microphone is "pointed", as mentioned previously), due to the combination of microphone geometry and technology. Microphone sound character is the result of all these inputs to a single point. Some sound characteristics are less desirable, and audio engineers will often attempt to overcome them by DSP (digital signal processing) or by adding microphones to help cancel some of the input effects.

A few amateur radio microphones advertise a high bandwidth and good frequency response, and do often sound a little better to the receiving ear on a wide (15 kHz) FM channel, but keep in mind that these qualities must fit within 3 kHz when using SSB (single sideband) on HF (high frequency) radio. To aid in the fit, some transceivers offer features such as low-cut filtering, high-EQ filters, and compression.

At one time, high-impedance (like 50 k-ohms to 90 k-ohms) microphones were popular in the sound industry because of their sensitivity. However, the higher impedance causes a micro-

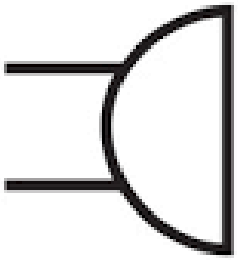
Brass Tacks

continued

phone to be susceptible to *handling noise*, such as from touching or holding the mic or moving its cable, even slightly. Today's microphones tend to exhibit much lower (around 500 ohms) impedances instead.

Proper microphone use

As you listen to others talk on the radio, you might have noticed their different speaking or microphone usage habits. When you hear noisy, scratchy, or picket-fencing sounds from them, those are typically not from microphone issues, but more often related to antenna and location. Poor microphone habits often exhibit themselves in audio qualities, such as low audio (can barely hear them), over-driven audio (too loud, clipping), inconsistent audio (loud-soft-loud sounding), and more. And the different types of microphones require different ways of using them for proper or optimal operation.



Microphone symbol

There are several habits to be conscious of when using a microphone, no matter the type, that can help your voice sound intelligent and pleasing, and less irritating to others.

- Try to speak across the microphone instead of blowing into it, or people will likely hear a puffing sound from your lips.
- Do your best not to fidget or move around, even though you might feel nervous.
- Before you press your PTT, be aware of ambient sounds such as music, crunching paper, or a nearby loud device like a running vacuum cleaner or garbage disposal.
- When you're sick or have a bad cold might not be the best time to talk on the radio.
- Finally, get some feedback by asking for an audio check, to gauge your voice loudness and microphone proximity to your mouth.

Embedded microphone use

An amateur radio microphone that is built-in to your radio produces a signal that typically possesses lower power than that of other mic types, and so sounds quieter when heard after it's transmitted. It often requires you to speak very close to the opening, like within a few millimeters. You might also need to increase your speaking volume when using one, to help it generate even more signal power.

Hand microphone use

You'll need to experiment to find how closely you should speak into your desk mic, because it will typically be more sensitive than an embedded one. You should probably keep your mouth about an inch or more away, to prevent over-driving your mic (*swallowing the mic* for slang). As mentioned, avoid stretching or pulling on the microphone cord. Be sure to either hang up your mic when you're not using it, or turn off your radio, or both, to prevent accidentally keying up and becoming the victim of a stuck mic.

Desk microphone use

A desk mic is built to remain stationary on a flat surface, so when you pick up a desk mic to speak, your listeners can often hear the stretch of your microphone cord or its rubbing against objects. If your desk mic doesn't seem to work, be sure to check two things, the VOX setting on your transceiver and the lock button on your desk mic.

Brass Tacks

continued

Personal habits

Many hams don't realize that quite a few personal sounds are transmitted with great fidelity while they press the PTT, and can sound quite *unsavory* to the rest of us. These include, but are not limited to, eating, burping, snorting, chewing gum, sniffing, clearing your throat, and passing gas. Sometimes the race between emitting the personal sound and releasing your mic button can be tricky, but please do your best to release your PTT first. Even more challenging is avoiding the transmission of those noises by others in the same room, over whom you have little control.

At times, it might feel awkward to release the PTT without saying your call sign or some other expression, but at a seemingly urgent moment, it's perfectly acceptable. Simply pick up afterward where you left off, and all will appear normal to the unsuspecting listener. Remember that you only need to say your call sign every ten minutes and when you're done.

Other microphone notes

Many who use a Baofeng hand microphone learn from listeners that their voice tends to sound muffled, but there are modifications they can make to relieve some of the symptoms. More related to the cord than the microphone itself, the plug to the Yaesu FT-60R hand microphone tends to pop out of its socket just far enough to enable the PTT, which can result in a stuck mic. Baofeng for their UV-82 series produces a hand mic that features a dual-PTT button, which I find convenient. Of all microphones, my favorite is the light-weight Yaesu hand mic (pictured previously), hosting a PTT button with the lightest touch of all hand mics, and consistently outputs terrific audio. Some day I hope to rewire one for my Icom IC-7300.

Finally

Microphones can be wireless by using Bluetooth or other methods to communicate, allowing for hands-free operation. Special microphones are being made for the hearing-impaired, such as those for cochlear implants. Also, not all transceivers use or need microphones, especially when operating digital modes or exclusively CW.

Summary

A microphone is a device that converts audio (sound / voice) into electrical signals. An amateur radio station or setup that intends to convey voice and sounds by radio waves typically requires a microphone. Several microphone *technologies* have dominated today's market, and many microphone *types* exist, most adapted for convenience. A variety of properties describe microphone characteristics, some more applicable to amateur radio use than others, including sensitivity, dynamic range, tonal quality, and sound character. Good microphone habits include understanding appropriate microphone use for each type and avoiding the transmission of undesirable sounds.

Noji Ratzlaff, KNØJI (kn0ji@arrl.net)

Dear Annette

What's on your mind? Serious, humorous, technical, and thoughtful answers to your deepest, (mostly) ham-related questions.

Dear Annette:

What will happen if I broadcast without a license?

Bill in Salem

Dear Bill:

What will happen if you drive without a license? If you get caught broadcasting without a license, the penalties can be severe. If you don't get caught, you might interfere with an emergency communication in progress, potentially endagering somebody's life. But in the end, the license exam is easy enough that it costs you more in time and mental energy to ponder this question and its consequences than it would to actually pass the exam.

Dear Annette:

How close to my radio can I mount my power supply without causing problems?

Dale in Orem

Dear Dale:

That's a great question, because it's yet another topic that's subject to a fair amount of myths. In most cases, you can mount your radio right next to, even on top of, your power supply, but there are a few things to keep in mind when you do. First, separate them if you suspect their proximity results in interference to your radio, or to others. Second, be sure to allow plenty of room for air flow, to prevent either device from overheating. Third, try and keep both free of dust, again to maximize ventilation. And if you do separate them, keep your DC cord as short as possible, to minimize the I^2R losses. Each of my mobile rigs arrived with a vehicle mounting bracket that I installed underneath the unit. This provides for automatic ventilation separation when I set the rig on the power supply, and presents the front panel display at a slight upward angle.

Dear Annette:

How do I get my coax around a 90-degree corner without damaging it? Just so you'll know, I'm using LMR-400.

EJ in Stansbury Park

Dear EJ:

I use one of these handy connectors between two sections of my coax at the corner:

Dear Annette:

After suffering a stroke a couple of years ago, I can no longer do CW, but I still want to enjoy the conversations. Is there a good CW decoder available for somebody like me?

Woody in Provo

Dear Woody:

I'm so sorry to hear of your stroke and your resulting disability! That's no doubt very frustrating for you. I believe there are good CW decoders in FLDigi, N1MM, Win4Icom, and others. I like CWGet by DXSoft for $35.

Got a question for Dear Annette*? Email it to* ***uvarcshack@gmail.com*** *and include your town name. Sorry, no guarantees.*

The Amateur in You, Part 1

What have you been pondering?

Ham radio realities

Many people have gotten into ham radio because of the promises they've heard on social media, by word-of-mouth, and even official amateur radio websites. Some see groups that advertise ***When all else fails*** and believe that, no matter what, ham radio will stay up and remain running. But the reality is that, just like any other human invention, amateur radio has its limitations.

Usually, I enjoy talking about ham radio possibilities and explain to crowds what a knowledgeable operator can do under adverse circumstances, even when the internet, or electricity itself becomes unavailable. I prefer to talk about things in a positive light. But the song by the Rolling Stones "You Can't Always Get What You Want" occasionally gets stuck in my head, reminding me that, while versatile and powerful, our wonderful craft isn't perfect.

For example, say you got into ham radio to keep in contact with your daughter in the next state, should the power go out. Is that possible? Of course it is. But ***possible*** doesn't always mean *easy* or *cheap*. Your daughter will need to be licensed. You might insist that she won't need one during an emergency, but will she know how to use a ham radio if she never trained on one (which training requires a license)? And if she has her license, is she near a repeater that's linked (by EchoLink or IRLP or a digital mode) to one near you, that supports her particular linking mode?

Ok, so you two can turn to communication on HF by skywave (the bouncing of your ham radio signals off the ionosphere), but that will require both of you to hold General Class licenses, especially if you happen to be in the sunspot cycle when 10-meter operation is unfavorable. Even so, how far apart are you two? If you're only a hundred miles from each other, that'll typically require a different kind of antenna from one that's designed to communicate across the country. You can save a lot of money by building your own antennas, but do you know how, and which kind(s) are best for you two? Google can be your good friend, but beware of widely adopted misinformation and self-proclaimed field experts.

Then, once you two get your licenses and station hardware in gear, you might still be at the mercy of band conditions if you depend on skywave HF. Those can be the result of solar, space, geomagnetic, and atmospheric effects, much of which come and go almost at random.

And where will you two get your power? Once commercial power becomes unavailable, a generator is only as good as long as you have fuel, which might be enough. If you need something longer, you might need to turn to a solar solution, which can keep your batteries charged during the day. But how much battery and solar power will you need?

Finally, how much is all of this upgrading going to cost? As you can see, doing the *When all else fails* is certainly possible, but it's likely going to cost more than the $29 you spent on your entry-level radio.

Ok, I apologize that I'm being such a Negative Norman (all due respect to you Normans out there!). While amateur radio does offer possibilities that many other services and operations cannot, I felt that I owe it to you, to at least make you aware of its realities as well.

Noji Ratzlaff, KNØJI (kn0ji@arrl.net)

The Amateur in You, Part 2

What have you been pondering?

Desensitization

When trying to talk with somebody on the radio through a repeater, and both of you are in the same building, you might have found that you both sound garbled or one can't hear the other at all. If so, you two were probably the victims of a phenomenon known as *de-sen-si-ti-zation*, or ***desense*** for short. It's an issue that can catch an operator off-guard, prompting the person to check the offset, the tone, the squelch level, and other settings that seem to be adjusted correctly.

Desense can occur when a transceiver is attempting to receive a strong signal in the presence of another strong signal on a nearby frequency, making your transceiver seem *less sensitive to the desired signal*. For example, say you and a household member both have handhelds that are set to the 146.780 repeater. While you listen on 146.780 MHz, the repeater output, your household member presses the PTT and communicates to the repeater on 146.180 MHz, the repeater input. While your handheld is attempting to demodulate (interpret) the repeater signal on 146.780 MHz, the other signal from your household member on nearby 146.180 MHz is much closer to your handheld, and much stronger than the repeater signal.

The stronger signal over-powers your radio, causing it to prefer the stronger signal, even though it's off-frequency from the one you're listening to. This can result in you hearing the stronger, off-frequency signal, sounding garbled, and maybe even a little bit mixed with the weaker signal arriving from the repeater. Desensitization is not confined to handheld radios, and can also be experienced by mobile radios in two adjacent vehicles rolling down the highway, both tuned to the same repeater.

Because both the stronger nearby signal and the weaker distant signal of two of the ***same*** frequencies don't tend to exhibit this effect, desense is not typically a problem when communicating on simplex. But it can still occur on HF (which is typically only simplex) especially during a contest, in which strong, nearby-frequency signals are competing for your attention with another that you're tuned to. It's just that FM repeaters (and therefore our transceivers) require a much larger bandwidth to communicate, making the problem more obvious.

So, how do you solve the problem of desense? Probably the most immediately easy way is by separating the receiving and transmitting radios by some distance, like a hundred or more feet. If that's not easy or possible, try lowering the output power of the transmitting radio. And if that's not practical, set the receiving radio on reverse, so that it's listening on the repeater input, placing your two radios essentially on simplex with each other.

Some HTs are more susceptible to desense than others, because of lower front-end selectivity (ability to pick up signals of selected frequencies while rejecting undesirable signals). While all HTs exhibit some level of desensitization, Baofeng HTs seem to be a affected a little more by it than Yaesu HTs, for example. That’s not to say you should avoid Baofeng HTs; it just means you should be aware of this phenomenon if you use one for repeater communication.

Hot Tips

Good info for the new ham, and old stuff to refresh your memory

An external speaker might help

Your radio likely came outfitted with a good built-in speaker, to let you hear the operators on the opposite end and other sounds. If you and others nearby want to hear what your radio's receiving, then your little speaker is probably more than adequate for your needs. Still, there seem to be times when it's better to listen to what's coming across your radio loudly or in a more naturally sounding voice. For that, you might think about getting hold of an ***external speaker*** to do the job.

An external speaker is one that you can attach or plug into your transceiver, to modify the sound or place or direct the sound somewhere other than straight out from your radio. On many mobile or HF base radios, the internal speaker is mounted such that it points straight up in the air, or worse, straight down onto the table. This positioning often makes the audio sound muffled or quiet. Also, the typically small size of their internal speakers can make the audio sound tinny or enclosed in a can.

You don't need to purchase anything expensive for your external speaker. Of course, you can get a nice speaker that appears to complement your radio look or style if you want to, but a cheaper, aftermarket one will perform the same if you don't care as much about how it looks. You can often find good-quality external speakers at a local thrift store for less than ten dollars. Be sure each is labeled with an "8-ohm" or “8 Ω” impedance rating.

You'll likely need to attach your choice of mono, not stereo, connector on the wires extending from the speaker, since most modern transceivers are outfitted with mono audio jacks. For your handheld radio, it might require a little research on your part to find out what kind of external speaker is appropriate for it, due to its unique connector type. One way to solve that problem is to purchase an inexpensive speaker-microphone, cut off the microphone, and attach the correct wires to your external speaker.

The wooden box that your external speaker is mounted in can help your received audio sound deeper and richer. And you can point your external speaker in any direction you wish, like toward some students for whom you're trying to demonstrate your station set-up. During times like at Field Day, an external speaker allows you to share your experience with nearby listeners in a slightly noisy environment.

DIY

Worthwhile projects you can build on your own

Multi-cable entry enclosure

Many of you know that our family recently moved across town. This gave me an opportunity to do a few things a little differently as a result of past lessons learned. While I was somewhat proud of my cable routing job at the former house overall, my cable entry left a lot to be desired, so I decided to focus some of my new home shack efforts there. The goal was to bring three coax cables through a single weather-proof opening in my house, and make it look professional, or at least tidy.

First, I had to convince my good wife Lisa KR5LYS to allow me to drill a big hole in the foundation, something I realize that few hams, let alone their spouses, would ever tolerate. Being a ham herself, she didn't require a lot of convincing, but she cried once and got it over with. I promised her that it would look good in the end. We'll see whether I've lived up to that.

Next, the most difficult part was the planning, including numerous measurements, calculations, and mistakes. I'm listing the parts needed for three cables, one each for HF, VHF/UHF, and 6-meters. I've omitted everything on the other (non-enclosure) side of the arresters, including the coax, the antennas, and the anchoring, which I'll leave for you.

Parts list

One 8″x 4″ x 3″ weatherproof ABS enclosure

One 8′ x ½″ ground rod

Three Alpha-Delta ATT3G50U arresters

One pkg drywall anchors and masonry bit

One tube DAP Ultra Clear sealant

One pkg Nashua Stretch-and-Seal silicone tape

One pkg 5/8″ rubber hose washers

Blue painter's tape

Three SO-239 bulkhead barrel connectors

One ½″ ground clamp

Three 1-foot RG-8X coaxial cables PL-259

Three 15-foot RG-8X coaxial cables PL-259

Two 2″ corner braces

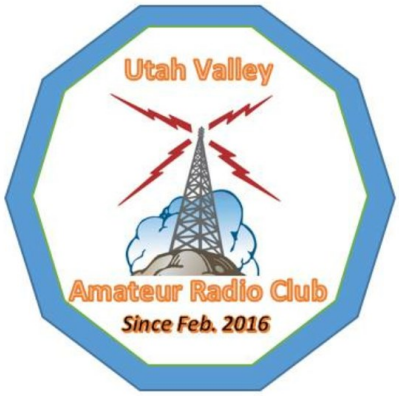
One 1¼″ x 2′ PVC tube

One 1¼″ HD rubber grommet

Planning ahead

I rented a hammer drill ("rotary hammer") with SDS-Max bit size, and a 1¾″ concrete SDS-Max bit (mine was 12″) to go with it, since I had planned to drill through the foundation. I also used my own hammer drill, which has an SDS-Plus bit size, along with a ¼″ concrete SDS-Plus bit to make a pilot hole. If you only need to drill through the wall, you'll need a stud finder. Going through either required me to penetrate sheetrock on the inside, so I used both a 12-inch ¼″ regular drill bit and a 1¾″ hole saw to get through it. I also located my drill motor and a bit set, including a 5/8″ wood bit (I would've used a metal bit, if I had one). With my 8-pound hand sledge (thanks, Daylon WB6KIT), I was ready to drive the ground rod into the dirt and break through the rocks.

I had to decide where and how to bring the coax cables into the house. We decided to locate my ham radio shack in an unused basement bedroom, which I'm also using for my office. I don't care for bringing coax, especially three of them, through the basement window well. I



DIY, continued

Multi-cable entry enclosure

could have used some flat pass-through connectors, but that still means unsightly cables snaking down the window well and obscuring my view. My remaining option was to bring them through the wall. The only problem is that the yard outside comes up to about four inches below my ceiling, so I only had four vertical inches to play with, and behind those four inches of wall was the house foundation.

Because I needed to bring three coaxial cable lines into my shack, I decided to use a 1¼″ ID tube as a conduit. This size allowed me to run multiple cable lines into the house with the PL-259 coax connectors already installed at the factory, without needing to cut off, then re-install new connectors. It also gave me the freedom and flexibility of introducing future cables through the conduit. In spite of its 1¾″ OD (outside diameter), the tube turned out to be large enough to serve my cable routing needs without being unsightly large.

Enclosure-tube assembly

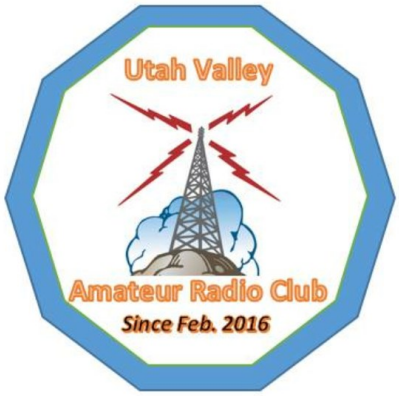
I drilled a 1¾″ hole in the back of the enclosure at an appropriate location. In my case, I had to get the hole as low as I could, since it ended up just inches above the dirt. Afterwards, I drilled three 5/8″ holes in the side of the enclosure for the SO-239 bulkhead barrel connectors. (If I had to do it over again, I would've drilled them on the other side, so that the closing latches would end up opposite the connectors.) I then cut the PVC pipe tube long enough to stick out ½″ from the concrete foundation and out of the inside wall about two inches. I then cemented the tube into the back of the enclosure using DAP Ultra Clear between the tube and the enclosure about ¼″ both inside and outside the enclosure, and let the sealant set for a week at room temperature.

Drill the big hole

My job now was to pinpoint exactly where to drill the hole. Half-way between the ceiling and the yard seemed reasonable, so I believe I had the vertical location figured out. I measured a spot that was a particular distance between where the window well glass meets the visible window edge and the inside wall of my shack closet. This way, I could measure that distance outside as well as inside, since the visible glass edge was common to both sides. These two gave me the hole location, and X marked the spot on the wall outside.

Foundation (concrete) hole

I first drilled a ¼″ hole through the foundation using my hammer drill and my ¼″ SDS-Plus bit. Then, I used the 12-inch ¼″ bit to slip into the new foundation hole and drill through the sheetrock into the shack. Using that as the pilot hole, I then used the 1¾″ hole saw and drilled a 1¾″ hole in the sheet rock from inside the shack. Once I secured the 1¾″ SDS-Max bit onto the SDS-Max hammer drill, I drilled straight through the foundation, using the ¼″



DIY, continued

Multi-cable entry enclosure

hole as the pilot. *Holding the hammer drill straight, pulling the trigger, and pressing on the drill body while supporting its weight was no easy task, and can wear you out easily.*

Wall (non-concrete) hole

In my previous house, I drilled a similar hole, and at the same diameter, but through the studded wall instead of the foundation. I used the stud finder to help me drill away from the studs, but I had to track where the electrical wires ran, so I could miss those too. For the wall, using the regular drill motor was a lot easier than with a hammer drill. I still had to use a 12-inch long ¼″ pilot bit, but all I needed to do was follow it with a 1¾″ hole saw from the outside, then with the same hole saw from the inside at the pilot hole.

Installing the enclosure-tube assembly

I slipped the enclosure-tube assembly into the 1¾″ hole I drilled into the foundation. I then drilled two 1/8″ holes into the back of the enclosure for wall-mounting the assembly, marking the foundation with the drill bit. I removed the enclosure-tube assembly and drilled the holes in the foundation with a ¼″ masonry bit where I marked them with the 1/8″ bit. I then hammered the drywall anchors into the holes.

I removed the enclosure-tube assembly from the foundation hole just a few inches, and liberally applied more DAP Ultra Clear around the gap between the tube and the foundation hole. I slipped the assembly all the way into the hole, applied the drywall anchor screws through the 1/8″ holes in the enclosure, and tightened them reasonably snug.

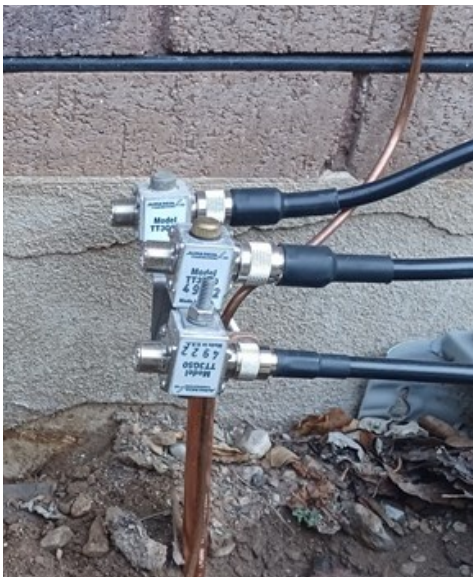
Next, I removed one nut from each barrel bulkhead connector, slipped the barrel through one of the three 5/8″ holes in the enclosure side, slipped a rubber washer over the thread from the outside, and re-applied the nut to the barrel on the outside and tightened the nut to the washer. I repeated this with the remaining barrel connectors.

I attached the rubber grommet to the shack-end of the tube, routed the three shack cables through the tube one-by-one from the shack end, then connected them to the bulkhead barrel connectors inside the enclosure. That completed the enclosure construction.

DIY, continued

Multi-cable entry enclosure

Grounding



After I picked a spot in the dirt about seven inches from the foundation (for convenience) and about eight inches from the enclosure, my grandson Calvin helped me pound the ground rod into the dirt with my trusty 8-pound hand sledge. I then attached the ground clamp to the ground rod about four inches from the top of the rod. I drilled out the holes of the two corner braces with a ¼″ bit and attached the braces to the ground clamp. I then bolted the arresters to the corner braces. I wish I had taken more photos of this detail, but maybe next time.

I laid out the 4 AWG ground wire on the roof and draped it down to the ground rod to measure. Then, I attached a ground clamp to the antenna masts on the roof and routed the ground wire through all the rooftop ground clamps and then the one on the ground rod, all of them through the screw hole of the clamps.

I connected the 1-foot coax cables between the barrel bulkheads of the enclosure and the arresters, and the coax coming down from the antennas to the other side of the arresters. I finished up the whole project by wrapping all nine weather-exposed connectors with silicone tape, not including the ones on the roof at the antennas.

Summary

Just so you'll know, this was no single afternoon project, but it was a rewarding multiple-day effort that paid off both technically and aesthetically. This enclosure not only looks neat, but is completely weather-proof against the elements. Most importantly, Lisa approves.

Noji Ratzlaff, KNØJI (kn0ji@arrl.net)

Living in the Past

Historical perspective

The greatest mathematician of all time

While playing with numbers during class, Carl Friedrich Gauss amazed his elementary school teacher by devising a simple way of summing all integers from 1 to 100. Not long afterwards, he again impressed teachers by forming the Diophantine equation using coefficients of polynomials to form the basis for number theory. Later in junior high school, Carl had solved the construction puzzle of a 17-sided polygon, which had baffled mathematicians since ancient Greece, and which led his teachers and his mother to recommend the child prodigy to professors at the University of Gottingen. By 1797, at age 20, Carl Gauss presented in his doctoral thesis the proof of the fundamental theorem of algebra, still used today.

Carl derived new calculation methods to explain statistical models, geometric shapes, and physical phenomena. He made breakthrough after breakthrough in the field of mathematics relating to modular arithmetic, method of least squares, the theory of factorization, differential geometry, and much more. The summary of his genius was that, while much of the science explored to his day was largely conceptual or confined to laboratory experiments, Gauss pioneered the application of mathematics to them. The concepts, theorems, proofs, and analyses that Carl developed over the years established him as the first native German named the top mathematician of his era. The following box lists his largest contributions:

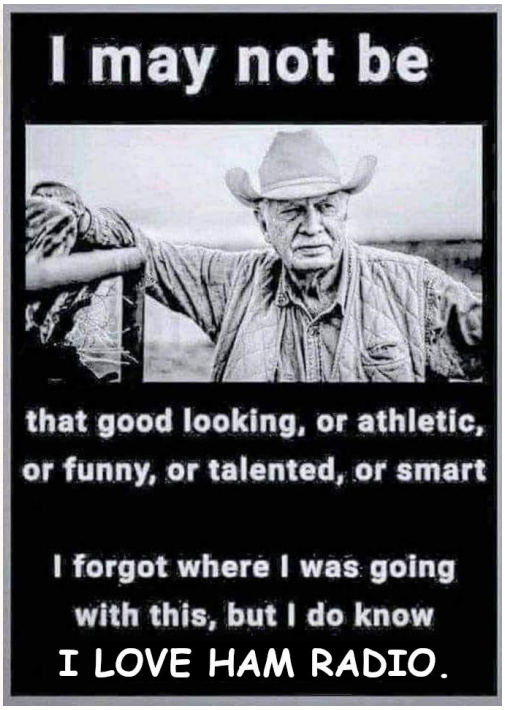
Gaussian Elimination	Non-Euclidean geometry	Gaussian Quadrature	Continued fractions map
Gauss's Law	Gauss Composition Law	Gauss-Seidel Method	Gaussian curvature
Gauss's Law of Magnetism	Prime Number Theorem	Gauss's Method	Gauss-Bonnet Theorem
Gaussian gravitation constant	Gaussian integers	Gauss-Markov Theorem	Space curve linking
Gauss's constant	Gauss's Lemma	Gauss's Inequality	Vector potential function
Discrete Fourier Transform	Gauss sums	Gauss-Helmert Model	Gauss's Theorem
Method of Least Squares	Gauss continued fractions	Gauss-Kuzmin Distribution	Principle of Least Constraint

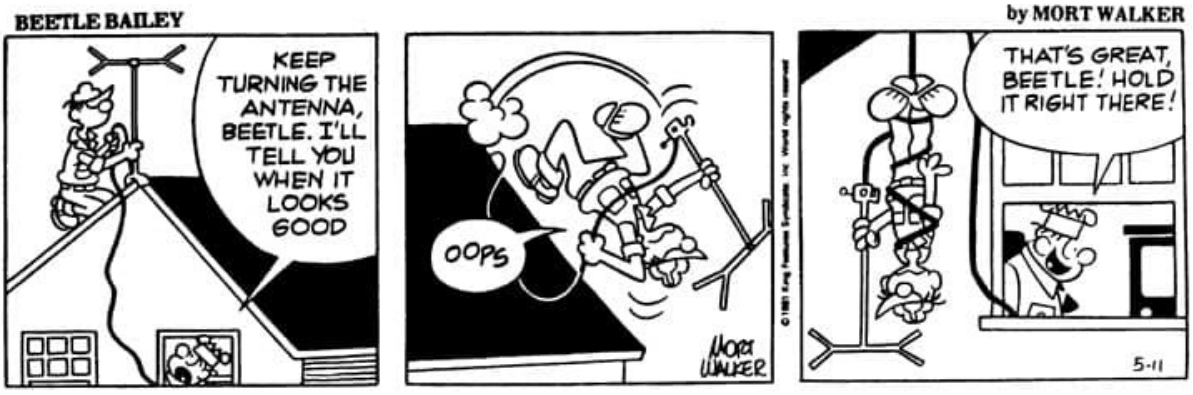
Eventually, his mathematical genius led him to explore the world of electricity and magnetism, thanks to the then-recent discoveries by Hans Christian Oersted and Michael Faraday. Carl developed the idea of the vector potential function, which formed the basis of Faraday's Law, relating electromotive force at a point to the instantaneous rate of change. He invented the magnetometer and the heliotrope to aid his research in magnetism. In an attempt to find a unifying law for long-distance influence of electromagnetism, electrodynamics, and induction, Carl mathematically derived a number of important behavior-governing physical laws that explain the way electromagnetic effects (radio signals, as we call them today) work.

Carl became fluent in 10 languages, and was presented with prestigious awards and titles from the governments and scientific societies of France, England, Spain, Sweden, Belgium, Denmark, Russia, Austria, The Netherlands, and what today is Germany. His list of published writings in mathematics and physics is impressive to say the least. He has been heralded numerous times as "one of the three greatest mathematicians of all time" (alongside Isaac Newton and Archimedes) "if not the greatest of all time". You can read more about Carl Gauss in MacTutor, the National Council of Teachers of Mathematics, and the Magnet Academy.

Side of Bacon

A little ham humor





For Your Insight

Information you could use

Club meeting format

Here's the usual agenda for club meetings, at the Orem City Council Chamber Room, 56 N State St:

Talk-in frequency on the club repeaters

6:30 pm : Eyeball QSO

socialize / put faces with call signs

radio programmers available to help you

6:45 pm : Call the meeting to order

meeting lineup (agenda)

announcements / calendar / new hams

7:00 pm : Discussion / presentation

7:45 pm : Door prizes

7:55 pm : Dismiss and disassemble

8:00 pm : *Club QSY* to a local eatery

Something you'd like to see at the meetings?

Thanks to Heath Stevenson for making our monthly meetings possible!

Monthly meeting help

We're grateful for the volunteers who help with various tasks that make our club night just that much more friendly and useful to everybody. Monthly, we need help with

- programming radios (thanks, Ralph!)
- taking photos or videos during the meeting (thanks, Joe!)
- setting up tables and chairs (thanks, Heath!)

Lynx

Websites for your education and leisure

Ham Radio Equipment
Ham Radio Nets
Radio Programming
Complete ham radio education
Net Training Topics
76ers Group and UVARC Group pages
New Ham Page

Send your input to ***uvarcshack@gmail.com***

Test your knowledge

General and Extra review (answers next page)

G2BØ7 : Which of the following complies with commonly accepted amateur practice when choosing a frequency on which to initiate a call?

A. Listen on the frequency for at least two minutes to be sure it is clear
B. Identify your station by transmitting your call sign at least 3 times
C. Follow the voluntary band plan
D. All these choices are correct

E4CØ4 : What is the noise figure of a receiver?

A. The ratio of atmospheric noise to phase noise
B. The ratio of the noise bandwidth in hertz to the theoretical bandwidth of a resistive network
C. The ratio of thermal noise to atmospheric noise
D. The ratio in dB of the noise generated by the receiver to the theoretical minimum noise

Calendar

What's happening
(times are Mountain Time)

Provo Ham Exam Sessions

Provo Fire Station #2, 2737 N Canyon Rd

Sign up at HamStudy.org/sessions/nv7v

Wed 18 Dec, 7:00 to 8:00 pm
Sat 21 Dec, 2:30 to 5:00 pm
Wed 15 Jan, 7:00 to 8:00 pm
Sat 18 Jan, 2:30 to 5:00 pm
Sat 15 Feb, 2:30 to 5:00 pm
Wed 19 Feb, 7:00 to 8:00 pm

*Email **uvhamtest@gmail.com** for info*

Provo One-day Technician Courses*

Third Saturday Monthly at 8:00 am

Provo Fire Station #2, 2737 N Canyon Rd

** September through April*

2025 Orem Ham Radio Courses

Sign up at psclass.orem.org

Technician : Jan 21, 28, Feb 4, 11
General : Mar 18, 25, Apr 1, 8
Extra : Jul 15, 22, 29, Aug 5, 12
Technician : Sep 16, 23, 30, Oct 7

Club Meeting Calendar (6:30 pm)

On YouTube Live, and Facebook Live

December 5*	January 2
February 6	March 6
April 3	May 1

† *Ham Radio Fair, Pheasant Brook Park*

** 6:00 pm at the Orem Friendship Center*

Regular Nets

UVARC Family Net, Sun 3:30 pm, 146.780
NE UC ERC Net, 1st Sun 9 pm, 147.540 (s)
Health & Fitness Net, Mon 7 pm, 146.780
UVARC Ladies' Net, Tue 7 pm, 146.780
DMR Utah Net, Wed 6 pm, TG 3149, CC 1
Utah 76ers, Wed 7 pm, 146.760
UVARC HF Net, Wed 9 pm, 28.345 / 7.220
UVARC New Ham Net, Thu 7 pm, 146.780
CERT Ham Net, 2nd, 4th Thu 8:pm, 146.780
Utah County 6-meter Net, Fri 8 pm, 50.140
Family History Net, Sat 8 pm, 146.780
See a larger list of nets at noji.com/nets

Upcoming Contests

ARRL 10-meter Contest
5 pm Fri Dec 13 to 5 pm Sun Dec 15

ARRL Kids Day
11 am to 5 pm Sat Jan 4

North American QSO Party (NAQP)
11 am to 11 pm Sat Jan 18

Winter Field Day
Noon Sat Jan 25 to noon Sun Jan 26

See a larger list at contestcalendar.com

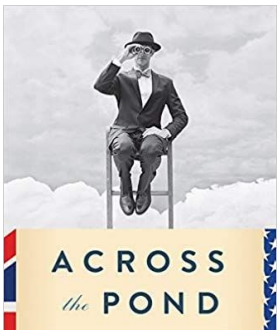
Answers to *Test your knowledge*

G2BØ7 : **C** (Follow the voluntary band plan)

E4CØ4 : **D** (The ratio in dB of the noise generated by the receiver to the theoretical minimum noise)

Across the Pond

That is, the Utah Lake 'pond'



Eagle Mountain ham radio activities

A list of amateur radio activities near Eagle Mountain, organized primarily by Dave Becar KI6OSS. Unless otherwise noted, all these activities will be held at the **Eagle Mountain City Hall**, 1650 Stagecoach Run. Please contact Dave at **ki6oss6365@gmail.com** to register for any of the classes or exams, for any additional information, or questions in general.

February 2025 Technician Course

Thu 13 February, 7 to 9 pm
Thu 20 February, 7 to 9 pm
Thu 27 February, 7 to 9 pm
Thu 13 March, 7 to 9 pm
Thu 20 March, 7 to 9 pm

Ham Radio Exam Session

Sat 22 March 10 am
Open to all, for any license class

May 2025 General Course

Thu 08 May, 7 to 9 pm
Thu 15 May, 7 to 9 pm
Thu 22 May, 7 to 9 pm
Thu 29 May, 7 to 9 pm
Thu 12 June, 7 to 9 pm

Ham Radio Exam Session

Sat 14 June, 10 am
Sat 28 June, 10 am (Field Day)
Open to all, for any license class

August 2025 Technician Course

Thu 14 August, 7 to 9 pm
Thu 21 August, 7 to 9 pm
Thu 28 August, 7 to 9 pm
Thu 11 September, 7 to 9 pm
Thu 18 September, 7 to 9 pm

Ham Radio Exam Sessions

Sat 20 September, 10 am
Sat 27 September, 10 am (Swap Meet)
Open to all, for any license class

October 2025 Technician Course

Thu 09 October, 7 to 9 pm
Thu 16 October, 7 to 9 pm
Thu 23 October, 7 to 9 pm
Thu 30 October, 7 to 9 pm
Thu 13 November, 7 to 9 pm

Ham Radio Exam Session

Sat 15 November, 10 am
Open to all, for any license class

Ham Radio Nets

Eagle Mountain ECT Net
Sundays, 9 pm 147.220+ MHz (151.4 Hz)

Eagle Mountain Chimney Rock Stake
Sundays 8:30 pm 446.500 (s)

Eagle Mountain Central Stake
Saturday 8 pm 145.650 (s)

Vendors

For your convenience

Pockrus Joystick J-pole

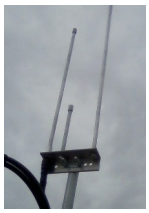
$30, open-stub aluminum half-wave, dual-band J-pole antenna

$40, 6-meter dipole, $20 for the 220 MHz (1.25 m) antenna

by Carl Pockrus, WE7OMG (email omgantennas@gmail.com to order)

Half-wave performance, solid construction, weather-proof, low wind-load

Probably the best-performing outdoor antenna you can get for the price



Super-Elastic Signal Stick

$20, vertical quarter-wave flexible antenna

by Richard Bateman, KD7BBC, of *SignalStuff* (and maker of *HamStudy*)

Super-performing antenna for your HT (handhold transceiver)

Visit SignalStuff and select SMA-Male, SMA-Female, or BNC

Ham Radio Podcasts v1.50

by Trevor Holyoak, AG7GX (email android@holyoak.com)

Stream podcasts (such as *100 Watts and a Wire*, *Amateur Radio Newsline*, *ARRL Audio News*, etc.) or download for later listening

For Android 4.1 and up (ad-free available for purchase)

Club Logo and Call Sign Embroidering

Want your call sign or name (or both!) embroidered on your shirt, your hoodie, your duffle? Or how about a club patch with your call sign?

by Glenna Gardner, WE7SEW (glenna0354@gmail.com or text 801-592-2503)

Call sign or name = $5, Both = $8, UVARC patch = $5, Patch with call = $9

Portable Aluminum J-pole

$60, sectioned, open-stub aluminum half-wave, dual-band J-pole antenna

by Stan, KJ7BDV and Kent, N7EKF (email skantenna@yahoo.com for info or call 801-372-7260)

Complete antenna breaks down into a compact 2″ x 6″ x 12″ package weighing only 3 lbs, perfect for backpacking and portable work where you really need a good 2-meter antenna

HamBadgers

Amateur radio name badges and other products

$10, official UVARC ham radio name badge with the club logo

Visit Ham Badgers and select Ham Radio Clubs > Utah Valley Amateur Radio Club

Email Eric Palmatier at hambadgers@gmail.com or call 919-249-8704

Where everybody knows your call sign

Utah Valley Amateur Radio Club
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Orem, Utah, 84059-1288 USA

K7UVA
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Email: k7uva@arrl.net

Repeaters: 146.780–, 100.0
448.200–, 100.0 224.560–, 100.0
145.250–, 100.0 448.225–, 100.0
Newsletter input?
Email uvarcshack @ gmail.com
Need help?
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[See all our newsletters on uvarc.club]

We are the *Utah Valley Amateur Radio Club*, a 501(c)(3) non-profit (EIN 81-360-6416) Utah corporation (9752825-0140) that was organized in an obscure Orem fire station on 02-05-2016 to provide amateur radio enthusiasts in Utah County and surrounding areas a way to gather and discuss all things ham. Our primary purposes are to provide a local amateur radio resource, help new hams in their new-found adventures, and to give more experienced hams a reason to share their wealth of knowledge and wisdom in a friendly atmosphere of fellowship. We're an ARRL Affiliate and work in cooperation with the Utah VHF Society, but are not subsidiary to them, to ARRL, ARES, or any other organization, although many of our members and leaders might also belong to the same.

This newsletter is copyrighted and published by the Utah Valley Amateur Radio Club, and its purpose is to convey the tone and temperament of the club, to inform and entertain its members, and to entice the rest. To join, go to uvarc.club/join, then sign up at www.facebook.com/groups/uvarc/ to stay informed. For more information about our club or about amateur (ham) radio in general, please email or text or call us.

More than just a club, we invite you to become part of a great ham radio friendship in Utah Valley

Our fearless leadership

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From all of us to you, 73